

significant resources areas and may want to apply specific design standards in others.

04.1.1 Visibility/Camouflage Personal wireless service facilities shall be camouflaged as follows:

04.1.1.1 Camouflage by Existing Buildings or Structures:

- a. When a personal wireless service facility extends above the roof height of a building on which it is mounted, every effort shall be made to conceal the facility within or behind existing architectural features to limit its visibility from public ways. Facilities mounted on a roof shall be stepped back from the front facade in order to limit their impact on the building's silhouette.
- b. Personal wireless service facilities which are side mounted shall blend with the existing building's architecture and, if over 5 square feet, shall be painted or shielded with material which is consistent with the design features and materials of the building.

04.1.1.2 Camouflage by Vegetation:

If personal wireless service facilities are not camouflaged from public viewing areas by existing buildings or structures, they shall be surrounded by buffers of dense tree growth and understory vegetation in all directions to create an effective year-round visual buffer. Ground-mounted personal wireless service facilities shall provide a vegetated buffer of sufficient height and depth to effectively screen the facility. Trees and vegetation may be existing on the subject property or installed as part of the proposed facility or a combination of both. The SPGA shall determine the types of trees and plant materials and depth of the needed buffer based on site conditions.

Commentary: It is generally recommended that a vegetated buffer at least fifty feet in width be provided on all sides of a ground-mounted facility. Facilities over fifty feet in height should have wider buffer areas. However, there may be instances in which it is not feasible to fully buffer a facility (for example, within an electric utility right of way). For this reason, the Model Bylaw recommends that the SPGA determine the appropriate width of the buffer and the types of plant materials and trees to be used.

04.1.1.3 Color:

- a. Personal wireless service facilities which are side-mounted on buildings shall be painted or constructed of materials to match the color of the building material directly behind them.

- b. To the extent that any personal wireless service facilities extend above the height of the vegetation immediately surrounding it, they shall be painted in a light grey or light blue hue which blends with sky and clouds.

Commentary: Towns should consider the color of surrounding water towers and other tall structures to determine the most appropriate color for the facility so that it is least visible against the skyline/horizon.

04.1.2 Equipment Shelters

Equipment shelters for personal wireless service facilities shall be designed consistent with one of the following design standards:

- a. Equipment shelters shall be located in underground vaults; or
- b. Equipment shelters shall be designed consistent with traditional Cape Cod architectural styles and materials, with a roof pitch of at least 10/12 and wood clapboard or shingle siding; or
- c. Equipment shelters shall be camouflaged behind an effective year-round landscape buffer, equal to the height of the proposed building, and/or wooden fence. The SPGA shall determine the style of fencing and/or landscape buffer that is compatible with the neighborhood.

04.1.3 Lighting and Signage

- a. Personal wireless service facilities shall be lighted only if required by the Federal Aviation Administration (FAA). Lighting of equipment structures and any other facilities on site shall be shielded from abutting properties. There shall be total cutoff of all light at the property lines of the parcel to be developed, and footcandle measurements at the property line shall be 0.0 initial footcandles when measured at grade.
- b. Signs shall be limited to those needed to identify the property and the owner and warn of any danger. All signs shall comply with the requirements of the Town's sign regulations.
- c. All ground mounted personal wireless service facilities shall be surrounded by a security barrier.

04.1.4 Historic Buildings and Districts

- a. Any personal wireless service facilities located on or within an historic structure shall not alter the character-defining features, distinctive construction methods, or original historic materials of the building.

b. Any alteration made to an historic structure to accommodate a personal wireless service facility shall be fully reversible.

c. Personal wireless service facilities within an historic district shall be concealed within or behind existing architectural features, or shall be located so that they are not visible from public roads and viewing areas within the district.

Commentary: Because of the sensitivity of many historic districts, and because of the historical and architectural significance of many structures within historic districts, towns may determine that personal wireless service facilities are inappropriate in these districts and choose to prohibit them. Towns should consider the fact that towers, cupolas or spires on historic buildings may accommodate wireless facilities and be less visible than free-standing facilities. The integrity of an historic structure, however, should always be considered to insure that the addition of a personal wireless service facility does not threaten the building's original materials, architectural design, or distinctive construction methods. For example, there may be instances where architectural features could be replaced with fiberglass. However, Historical Commissions and Historic District Commissions should be involved in the review of any applications to locate such facilities within an historic district or within an historic structure.

04.1.5 Scenic Landscapes and Vistas

a. Personal wireless service facilities shall not be located within open areas that are visible from public roads, recreational areas or residential development. As required in the Camouflage section above, all ground-mounted personal wireless service facilities which are not camouflaged by existing buildings or structures shall be surrounded by a buffer of dense tree growth.

b. Any personal wireless service facility that is located within 300 feet of a scenic vista, scenic landscape or scenic road as designated by the town shall not exceed the height of vegetation at the proposed location. If the facility is located farther than 300 feet from the scenic vista, scenic landscape or scenic road, the height regulations described elsewhere in this bylaw will apply.

Commentary: The Cape has a relatively flat topography with low horizons emphasized by a low tree canopy. Structures over 50 feet in height can break the horizon line and effectively dominate the landscape, especially when sited at the top of a hill. Distinctive open landscapes such as marshes, agricultural fields and cranberry bogs provide vistas which should not be degraded by wireless facilities. In order to protect key vistas from visual intrusions, towns should make an effort to inventory distinctive scenic vistas, landscapes and

scenic roads in a comprehensive plan or open space plan and should limit personal wireless service facilities in these areas.

04.2 Environmental Standards

04.2.1 Personal wireless service facilities shall not be located in wetlands. Locating of wireless facilities in wetland buffer areas shall be avoided whenever possible and disturbance to wetland buffer areas shall be minimized.

04.2.2 No hazardous waste shall be discharged on the site of any personal wireless service facility. If any hazardous materials are to be used on site, there shall be provisions for full containment of such materials. An enclosed containment area shall be provided with a sealed floor, designed to contain at least 110% of the volume of the hazardous materials stored or used on the site.

04.2.3 Stormwater run-off shall be contained on-site.

04.2.4 Ground-mounted equipment for personal wireless service facilities shall not generate noise in excess of 50 db at the property line.

04.2.5 Roof-mounted or side-mounted equipment for personal wireless service facilities shall not generate noise in excess of 50 db at ground level at the base of the building closest to the antenna.

Commentary: The noise standards of this Bylaw will require measurements by a qualified acoustical engineer.

04.3 Safety Standards

04.3.1 Radiofrequency Radiation (RFR) Standards

All equipment proposed for a personal wireless service facility shall be authorized per the FCC Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation (FCC Guidelines).²

Commentary: The Telecommunications Act gives the FCC jurisdiction over the RFR emissions from personal wireless service facilities. However, towns may ask for documentation that the FCC Guidelines are being met. Review of this information will likely require the expertise of an RF Engineer. Massachusetts Department of Public Health regulation 105 CMR 122.000 requires that the Department of Public Health approve all sites for wireless

² The FCC Guidelines were published on August 1, 1996. The FCC has extended the implementation date of the FCC Guidelines from January 1, 1997 to September 1, 1997. The existing guidelines remain in effect.

facilities with respect to emissions. At the present time, the FCC standards and the Massachusetts standards are the same. The Department of Public Health issues a letter of approval which is sent to the wireless carrier and to the Public Health Department of town in which the facility is proposed. Towns should require submission of the approval letter from the Massachusetts Department of Public Health prior to project approval as part of their application package.

05.0 Application Procedures

05.1 Special Permit Granting Authority (SPGA). The Special Permit Granting Authority (SPGA) for personal wireless service facilities shall be the Planning Board.

Commentary: Different towns have different preferences for SPGAs. The Model Bylaw recommends that the Planning Board (PB) serve as the Special Permit Granting Authority for personal wireless service facilities. Towns may choose instead to have the Zoning Board of Appeals serve as the SPGA.

05.2 Pre-Application Conference

Prior to the submission of an application for a Special Permit under this regulation, the applicant is strongly encouraged to meet with the SPGA at a public meeting to discuss the proposed personal wireless service facility in general terms and to clarify the filing requirements. The SPGA shall meet with an applicant under this regulation within twenty-one (21) days following a written request submitted to the SPGA and the Town Clerk. If the SPGA fails to meet with an applicant who has requested such a meeting within twenty-one (21) days of said request and said meeting has not been postponed due to mutual agreement, the applicant may proceed with a Special Permit application under this regulation without need for a pre-application conference.

05.3 Pre-Application Filing Requirements

The purpose of the conference is to inform the SPGA as to the preliminary nature of the proposed personal wireless service facility. As such, no formal filings are required for the pre-application conference. However, the applicant is encouraged to prepare sufficient preliminary architectural and/or engineering drawings to inform the SPGA of the location of the proposed facility, as well as its scale and overall design.

Commentary: The purpose of a pre-application conference is to give the SPGA advance notice of an application for a personal wireless service facility within any zoning district and to remove, to the extent possible, some of the "pressure" that Boards experience once a formal Special Permit has been

applied for. The conference is further designed to educate both the SPGA and the applicant as to the project and the likely concerns raised by the scale and placement of the personal wireless service facility.

05.4 Application Filing Requirements

The following shall be included with an application for a Special Permit for all personal wireless service facilities:

05.4.1 General Filing Requirements

- a) Name, address and telephone number of applicant and any co-applicants as well as any agents for the applicant or co-applicants.
- b) Co-applicants may include the landowner of the subject property, licensed carriers and tenants for the personal wireless service facility.
- c) A licensed carrier shall either be an applicant or a co-applicant.
- d) Original signatures for the applicant and all co-applicants applying for the Special Permit. If the applicant or co-applicant will be represented by an agent, original signature authorizing the agent to represent the applicant and/or co-applicant. Photoreproductions of signatures will not be accepted.

05.4.2 Location Filing Requirements

- a) Identify the subject property by including the Town as well as the name of the locality, name of the nearest road or roads, and street address, if any.
- b) Tax map and parcel number of subject property.
- c) Zoning district designation for the subject parcel (Submit copy of Town zoning map with parcel identified)
- d) A line map to scale showing the lot lines of the subject property and all properties within 300 feet and the location of all buildings, including accessory structures, on all properties shown.
- e) A town-wide map showing the other existing personal wireless service facilities in the Town and outside the Town within one mile of its corporate limits.
- f) The proposed locations of all existing and future personal wireless service facilities in the Town on a Town-wide map for this carrier.

05.4.3 Siting Filing Requirements

a) A one-inch-equals-40 feet vicinity plan showing the following:

- 1) Property lines for the subject property.
- 2) Property lines of all properties adjacent to the subject property within 300 feet.
- 3) Tree cover on the subject property and adjacent properties within 300 feet, by dominant species and average height, as measured by or available from a verifiable source.
- 4) Outline of all existing buildings, including purpose (e.g. residential buildings, garages, accessory structures, etc.) on subject property and all adjacent properties within 300 feet.
- 5) Proposed location of antenna, mount and equipment shelter(s).
- 6) Proposed security barrier, indicating type and extent as well as point of controlled entry.
- 7) Location of all roads, public and private, on the subject property and on all adjacent properties within 300 feet including driveways proposed to serve the personal wireless service facility.
- 8) Distances, at grade, from the proposed personal wireless service facility to each building on the vicinity plan.
- 9) Contours at each two feet AMSL for the subject property and adjacent properties within 300 feet.
- 10) All proposed changes to the existing property, including grading, vegetation removal and temporary or permanent roads and driveways.
- 11) Representations, dimensioned and to scale, of the proposed mount, antennas, equipment shelters, cable runs, parking areas and any other construction or development attendant to the personal wireless service facility.
- 12) Lines representing the sight line showing viewpoint (point from which view is taken) and visible point (point being viewed) from "Sight Lines" subsection below.

b) Sight lines and photographs as described below:

1) Sight line representation. A sight line representation shall be drawn from any public road within 300 feet and the closest facade of each residential building (viewpoint) within 300 feet to the highest point (visible point) of the personal wireless service facility. Each sight line shall be depicted in profile, drawn at one inch equals 40 feet. The profiles shall show all intervening trees and buildings. In the event there is only one (or more) residential building within 300 feet there shall be at least two sight lines from the closest habitable structures or public roads, if any.

2) Existing (before condition) photographs. Each sight line shall be illustrated by one four-inch by six-inch color photograph of what can currently be seen from any public road within 300 feet.

3) Proposed (after condition). Each of the existing condition photographs shall have the proposed personal wireless service facility superimposed on it to show what will be seen from public roads if the proposed personal wireless service facility is built.

c) Siting elevations, or views at-grade from the north, south, east and west for a 50-foot radius around the proposed personal wireless service facility plus from all existing public and private roads that serve the subject property. Elevations shall be at either one-quarter inch equals one foot or one-eighth inch equals one foot scale and show the following:

1) Antennas, mounts and equipment shelter(s), with total elevation dimensions and AGL of the highest point.

2) Security barrier. If the security barrier will block views of the personal wireless service facility, the barrier drawing shall be cut away to show the view behind the barrier.

3) Any and all structures on the subject property.

4) Existing trees and shrubs at current height and proposed trees and shrubs at proposed height at time of installation, with approximate elevations dimensioned.

5) Grade changes, or cuts and fills, to be shown as original grade and new grade line, with two-foot contours above mean sea level.

05.4.4 Design Filing Requirements

- a) Equipment brochures for the proposed personal wireless service facility such as manufacturer's specifications or trade journal reprints shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.
- b) Materials of the proposed personal wireless service facility specified by generic type and specific treatment (e.g., anodized aluminum, stained wood, painted fiberglass, etc.). These shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.
- c) Colors of the proposed personal wireless service facility represented by a color board showing actual colors proposed. Colors shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any.
- d) Dimensions of the personal wireless service facility specified for all three directions: height, width and breadth. These shall be provided for the antennas, mounts, equipment shelters and security barrier, if any.
- e) Appearance shown by at least two photographic superimpositions of the personal wireless service facility within the subject property. The photographic superimpositions shall be provided for the antennas, mounts, equipment shelters, cables as well as cable runs, and security barrier, if any, for the total height, width and breadth.
- f) Landscape plan including existing trees and shrubs and those proposed to be added, identified by size of specimen at installation and species.
- g) Within 30 days of the pre-application conference, or within 21 days of filing an application for a Special Permit, the applicant shall arrange for a balloon or crane test at the proposed site to illustrate the height of the proposed facility. The date, time and location of such test shall be advertised in a newspaper of general circulation in the Town at least 14 days, but not more than 21 days prior to the test.
- h) If lighting of the site is proposed, the applicant shall submit a manufacturers computer-generated point-to-point printout, indicating the horizontal footcandle levels at grade, within the property to be developed and twenty-five (25) feet beyond the property lines. The printout shall indicate the locations and types of luminaires proposed.

05.4.5 Noise Filing Requirements

The applicant shall provide a statement listing the existing and maximum future projected measurements of noise from the proposed personal wireless service facilities, measured in decibels Ldn (logarithmic scale, accounting for greater sensitivity at night), for the following:

- 1) Existing, or ambient: the measurements of existing noise.
- 2) Existing plus proposed personal wireless service facilities: maximum estimate of noise from the proposed personal wireless service facility plus the existing noise environment.

Such statement shall be certified and signed by an acoustical engineer, stating that noise measurements are accurate and meet the Noise Standards of this Bylaw.

05.4.6 Radiofrequency Radiation (RFR) Filing Requirements

The applicant shall provide a statement listing the existing and maximum future projected measurements of RFR from the proposed personal wireless service facility, for the following situations:

- 1) Existing, or ambient: the measurements of existing RFR.
- 2) Existing plus proposed personal wireless service facilities: maximum estimate of RFR from the proposed personal wireless service facility plus the existing RFR environment.
- 3) Certification, signed by a RF engineer, stating that RFR measurements are accurate and meet FCC Guidelines as specified in the Radiofrequency Radiation Standards sub-section of this Bylaw.

05.4.7 Federal Environmental Filing Requirements

a) The National Environmental Policy Act (NEPA) applies to all applications for personal wireless service facilities. NEPA is administered by the FCC via procedures adopted as Subpart 1, Section 1.1301 et seq. (47 CFR Ch. I). The FCC requires that an environmental assessment (EA) be filed with the FCC prior to beginning operations for any personal wireless service facility proposed in or involving any of the following:

- a) Wilderness areas.
- b) Wildlife preserves.
- c) Endangered species habitat.
- d) Historical site.
- e) Indian religious site.
- f) Flood plain.
- g) Wetlands.
- h) High intensity white lights in residential neighborhoods.
- i) Excessive radiofrequency radiation exposure.

b) At the time of application filing, an EA that meets FCC requirements shall

be submitted to the Town for each personal wireless service facility site that requires such an EA to be submitted to the FCC.

c) The applicant shall list location, type and amount (including trace elements) of any materials proposed for use within the personal wireless service facility that are considered hazardous by the federal, state or local government.

05.4.8 The Special Permit Granting Authority may waive one or more of the application filing requirements of this section if it finds that such information is not needed for a thorough review of a proposed personal wireless service facility.

06.0 Co-location

06.1 Licensed carriers shall share personal wireless service facilities and sites where feasible and appropriate, thereby reducing the number of personal wireless service facilities that are stand-alone facilities. All applicants for a Special Permit for a personal wireless service facility shall demonstrate a good faith effort to co-locate with other carriers. Such good faith effort includes:

- 1) A survey of all existing structures that may be feasible sites for co-locating personal wireless service facilities;
- 2) Contact with all the other licensed carriers for commercial mobile radio services operating in the County; and
- 3) Sharing information necessary to determine if co-location is feasible under the design configuration most accommodating to co-location.

Commentary: Co-location is one way to reduce the number of sites needed for personal wireless service facilities but it may not be appropriate in all locations. It is probably desirable to maximize the use of the existing ground-mounted facilities on the Cape, but it may be preferable to separate building-mounted sites so that the visual impact is reduced. Existing town-owned personal wireless service facilities may also be suitable sites for colocating new facilities.

06.2 In the event that co-location is found to be not feasible, a written statement of the reasons for the infeasibility shall be submitted to the Town. The Town may retain a technical expert in the field of RF engineering to verify if co-location at the site is not feasible or is feasible given the design configuration most accommodating to co-location. The cost for such a technical expert will be at the expense of the applicant. The Town may deny a Special Permit to an applicant that has not demonstrated a good faith effort to provide for co-location.

Commentary: If the town wishes to retain an RF engineer to advise the Planning Board in reviewing applications for personal wireless service

facilities at the applicant's expense, the town must first adopt the provisions of Chapter 593 of the Acts and Resolves of 1989, which allows towns to establish special accounts to hire consultants. If the Planning Board (or Zoning Board of Appeals) wishes to use developer funds for review of special permits, it must adopt regulations specifying a procedure for the submission and expenditure of such funds. Such rules and regulations must be adopted under MGL c. 40A Section 9 and 12.

06.3 If the applicant does intend to co-locate or to permit co-location, the Town shall request drawings and studies which show the ultimate appearance and operation of the personal wireless service facility at full build-out.

06.4 If the SPGA approves co-location for a personal wireless service facility site, the Special Permit shall indicate how many facilities of what type shall be permitted on that site. Facilities specified in the Special Permit approval shall require no further zoning approval. However, the addition of any facilities not specified in the approved Special Permit shall require a new Special Permit.

Estimates of RFR emissions will be required for all facilities, including proposed and future facilities.

Commentary: If a carrier wants to design a site for co-location, that should be indicated as part of its Special Permit application. This allows the Town to know ahead of time how many facilities will be located on any mount. It also allows the carriers to "pre-permit" a site for additional facilities so that they will not have to apply for another Special Permit later.

07.0 Modifications

A modification of a personal wireless service facility may be considered equivalent to an application for a new personal wireless service facility and will require a Special Permit when the following events apply:

a) The applicant and/or co-applicant wants to alter the terms of the Special Permit by changing the personal wireless service facility in one or more of the following ways:

- 1) Change in the number of facilities permitted on the site;
- 2) Change in technology used for the personal wireless service facility.

b) The applicant and/or co-applicant wants to add any equipment or additional height not specified in the original design filing.

08.0 Monitoring and Maintenance

08.1 After the personal wireless service facility is operational, the applicant shall submit, within 90 days of beginning operations, and at annual intervals from the date of issuance of the Special Permit, existing measurements of RFR from the personal wireless service facility. Such measurements shall be signed and certified by a RF engineer, stating that RFR measurements are accurate and meet FCC Guidelines as specified in the Radiofrequency Standards section of this Bylaw.

08.2 After the personal wireless service facility is operational, the applicant shall submit, within 90 days of the issuance of the Special Permit, and at annual intervals from the date of issuance of the Special Permit, existing measurements of noise from the personal wireless service facility. Such measurements shall be signed by an acoustical engineer, stating that noise measurements are accurate and meet the Noise Standards sub-section of this Bylaw.

08.3 The applicant and co-applicant shall maintain the personal wireless service facility in good condition. Such maintenance shall include, but shall not be limited to, painting, structural integrity of the mount and security barrier, and maintenance of the buffer areas and landscaping.

09.0 Abandonment or Discontinuation of Use

09.1 At such time that a licensed carrier plans to abandon or discontinue operation of a personal wireless service facility, such carrier will notify the Town by certified U.S. mail of the proposed date of abandonment or discontinuation of operations. Such notice shall be given no less than 30 days prior to abandonment or discontinuation of operations. In the event that a licensed carrier fails to give such notice, the personal wireless service facility shall be considered abandoned upon such discontinuation of operations.

09.2 Upon abandonment or discontinuation of use, the carrier shall physically remove the personal wireless service facility within 90 days from the date of abandonment or discontinuation of use. "Physically remove" shall include, but not be limited to:

- a) Removal of antennas, mount, equipment shelters and security barriers from the subject property.
- b) Proper disposal of the waste materials from the site in accordance with local and state solid waste disposal regulations.
- c) Restoring the location of the personal wireless service facility to its natural

condition, except that any landscaping and grading shall remain in the after-condition.

Commentary: It is important to note that difficulties may arise when more than one facility is located on the same structure. Tenant leases may terminate in different time frames, making it difficult to dismantle and remove a structure which has been abandoned by one carrier, but not by another.

09.3 If a carrier fails to remove a personal wireless service facility in accordance with this section of this Bylaw, the town shall have the authority to enter the subject property and physically remove the facility. The Planning Board may require the applicant to post a bond at the time of construction to cover costs for the removal of the personal wireless service facility in the event the Town must remove the facility.

10.0 Reconstruction or Replacement of Existing Towers and Monopoles

Guyed towers, lattice towers, utility towers and monopoles in existence at the time of adoption of this Bylaw may be reconstructed, altered, extended or replaced on the same site by Special Permit, provided that the Planning Board (SPGA) finds that such reconstruction, alteration, extension or replacement will not be substantially more detrimental to the neighborhood and/or the Town than the existing structure. In making such a determination, the Planning Board shall consider whether the proposed reconstruction, alteration, extension or replacement will create public benefits such as opportunities for co-location, improvements in public safety, and/or reduction in visual and environmental impacts. No reconstruction, alteration, extension or replacement shall exceed the height of the existing facility by more than twenty (20) feet.

Commentary: In some cases, it may be desirable to allow existing "towers" to be reconstructed or replaced so that they can accommodate additional antennas. Reconstruction generally entails structural improvements and could also include additional height to allow for co-location. A structurally stronger and higher structure may be more visually intrusive; however, reconstruction or replacement could reduce the number of new sites that are needed. In making such a determination, the Planning Board will need to consider the specific characteristics of the site. If it is in a sensitive viewshed, it may be more detrimental to allow reconstruction. These determinations need to be made on a case by case basis.

11.0 Term of Special Permit

A Special Permit issued for any personal wireless service facility over fifty (50) feet in height shall be valid for fifteen (15) years. At the end of that time

period, the personal wireless service facility shall be removed by the carrier or a new Special Permit shall be required.

Commentary: Many of the carriers are now seeking to build tall installations in order to get the maximum coverage in the first phase of developing their systems. As the networks are developed further over the coming years, the need for these higher facilities will diminish. The carriers will need more lower sites, spaced more closely together to manage the growing demand for wireless services. Thus, it makes sense to set a time limit on the validity of the special permit for the higher structures. This gives the towns the ability to have these structures removed if they are no longer needed in the future.